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THE NORMAL LABOR DAY IN COAL MINES.

THOMAS K. URDAHL.

The length of the labor day in any industry depends partly on the nature of the industry itself, but more largely upon the stage of industrial development which the industry has attained. Nearly every industry passes through the handicraft or house industry stage, in which there is no regularity of wage or employment, and where hours may be excessively long or short according to the season. It frequently happens that the hours of labor that prevail in such an industry in the handicraft stage, are maintained long after it has envolved into the factory stage. Long hours are also often found in such industries as mining or milling, because they have grown up in village or agricultural communities, where the customary labor day is from sunrise till sunset.

When the factory stage is reached labor organizations also make their appearance, and strive for higher wages and shorter hours of labor. In the great majority of cases employers of labor believe that a reduction of hours or increase in wages is detrimental to the business concerned, and resist all such efforts on the part of union or industrial laborers. Some of the coal-mines of this country are still in the handicraft stage, the pick and donkey cart being used in about the same way they were in the eighteenth century. Here a ten or twelve hour or even longer day naturally prevails. Others have reached the stage of capitalistic production where mining machinery in the form of steam and electric coal cutters, coal conveyors, huge hoists and breakers and thousands of

workmen, make coal mining a regular business, very similar in its operation to a large factory. Here we have conditions more favorable to short hours, regularity of employment, and of uniform scale of wages.

*The transition from the first to the second stage is not entirely due to the introduction of machinery, but to an even greater degree to the industrial development of the country itself. In the handicraft stage the market for coal was exceedingly uncertain and variable. The domestic or winter consumption of coal was by far the most important and the demand in summer was very small. The miner and operator was very often the same person, and worked his mine with the aid of a few workmen and boys. When demand ran short he would go out and look for buyers and having secured a few orders would call his men together and start work for a week or a month. Under such conditions it is evident that both the mine worker and the mine owner would be anxious to operate long hours in order to take advantage of the busy season.*¹

In the capitalistic stage the demand for coal is much more uniform all the year round. The smelters, the ocean steamers, and the factories of the country need the same amount of coal in the summer as in the winter, and the demand fluctuates only slightly from year to year, or from winter to summer. A single ocean steamer, like the *Lusitania*, is said to use as much coal per week as a city of 25000 needs for domestic use. This stable demand makes it possible to operate regularly, and to profitably make use of a shorter labor day. Where demand is very great, these mines may often run two, or even three, eight hour shifts of men, in twenty-four hours.

¹See Chart I.

This rather stable demand seems at present to be largely supplied by mines operated by corporations who are either directly or indirectly under the control of the coal-carrying railroads, and in a large percentage of them a long labor day still prevails. In the anthracite mines, which are almost entirely controlled by the railroads, there were in 1906, ninety companies operating with a nine hour day, three with a ten hour day, and a half dozen companies where the hours of labor varied from six to ten hours. In West Virginia the four railroads appear to be rapidly getting control of all the coal fields and are heavily interested in the largest coal mines. The nine and ten hour day is said to prevail in the majority of the mines.

Side by side with these corporation mines, we have numerous smaller ones, many of which are still in the handicraft stage, where output is determined by the exceptional demand of the winter months or of periods of industrial prosperity.² Here the long labor day seems often to be as natural and as necessary as long hours in the summer months in agriculture. A legal limitation upon the labor day would probably force many of these operators to shut down or sell out to the more powerful competitors, thus hastening a process now going on, which ultimately will result in consolidation of the coal industry of the country. In the larger mines on the other hand, that is, the mines which have regular transportation facilities at their disposal, the shorter work day would be possible. Here the ten and twelve hour day appears as a sort of arrested industrial development, which has been retained by artificial means, long after it should have passed away.

Lack of organization on the part of the mine workers

² See part above the broken line B C in Chart I.

is the chief cause. This is often the result of conscious or unconscious efforts on the part of operators, to introduce alien laborers over whom the labor organizer has little or no influence.

Just as the immigrant is the feeder of the sweatshop and one of the chief causes of the long hours prevailing there, so the foreigner is the chief factor in the retention of the long hours in the coal industry. Where native American labor is employed we find the long labor day only in communities, like the Southern states, where coal mining is a new industry. This will perhaps explain the hostility of the union men to the foreigners, or "dagos" as they are termed in mining communities, and furthermore shows the intimate relation between the immigration problem and the length of the labor day.

GEOGRAPHICAL DISTRIBUTION OF THE EIGHT HOUR DAY.

We have, therefore, a very complex problem to consider. Geographically the so-called eight hour day is found in the central states and the Rocky Mountain region, and the long hours are found in the East and South. In the central states, *i. e.* Ohio, Indiana, Illinois, southwestern Pennsylvania, Kansas, Arkansas, Oklahoma, Texas, and parts of Iowa and Kentucky the short labor day has been obtained through the efforts of the miners' unions by making it a part of their joint agreements with the operators. In Pennsylvania and West Virginia and in parts of Maryland, Virginia, Alabama, Tennessee, and Georgia, the eight, ten, and eleven hour days prevail side by side, with a preponderance in favor of the ten and eleven hours.³ The Rocky Mountain states that have secured an eight hour day by legislation are Utah, Wyoming, Montana, Nevada, Colorado, and the

³ See Charts IV, V, and VI.

Central state, Missouri. The Colorado law was declared unconstitutional by the state supreme court, but in the other states the laws now seem to be in force.

CONSTITUTIONALITY OF EIGHT HOUR MINING LAWS.

The chief question concerning the constitutionality of such laws, is whether or not they violate the Fourteenth Amendment by abridging the privileges and immunities of citizens of the United States. In the famous Utah case of *Holden v. Hardy*,⁴ the United States Supreme Court decided this question with all the justices except Brewer and Peckham concurring. In this case the court in conclusion lays down the principle, that the class of employees does not stand on an equal footing with the employers. The employer makes the rules and the employees are practically constrained to obey them. Hence self interest is often an unsafe guide and the legislature may properly interpose its authority. It is not so much the right of contract of the employer that is interfered with, as that of the laborer, whose right to labor as long as he pleases is violated. The fact that both parties are of full age and competent to contract does not necessarily deprive the state of its right to interfere where the parties do not stand on an equality and public health demands that one party to the contract shall be protected against himself. The state is no greater than the sum of its parts, and when the individual health is sacrificed the state must suffer. Some years later this decision had been handed down, a similar law in New York restricting the hours of bakers to sixty per week came before the Supreme Court for adjudication. The opinion of the Court, this time, delivered by Justice Peckham, ran in part as follows:⁵

⁴ 169 U. S. 366.

⁵ *Lochner v. New York*, 25 Sup. Court Rep. 539.

"There is no reasonable ground for interfering with the liberty of person or the right of free contract by determining the hours of labor in the occupation of a baker. There is no contention that bakers as a class are not equal in intelligence and capacity to men in other trades or that they are unable to assert their rights and care for themselves. . . . There is in our judgment no reasonable foundation for holding it to be necessary or appropriate as a health law to safeguard public health or the health of the individuals who are following the trade of a baker. . . . Under such circumstances the freedom of the master and employee to contract with each other in relation to their employment and in defining the same cannot be prohibited or interfered with by law without violating the federal constitution."

It is evident from these cases that the court holds, that coal mining is a dangerous, unhealthy occupation, and that it is a part of the *police power* of a state to pass an eight hour statute for protection of the health of the miners. The result of the Utah decision is that the miners have an eight hour "bank to bank" day. This means that they are hoisted and lowered on the time of their employer instead of on their own time, and makes the effective work day about seven and one half hours. This decision of the United States Supreme Court is of the very greatest importance for future legislation in the interest of coal miners and makes it possible, wherever the state constitution does not forbid, to enact laws on this subject.

THE MINERS' EIGHT HOUR DAY IN FOREIGN COUNTRIES.

Eight hour legislation has not only been tried by the so-called sagebush legislators of the Rockies, but has been put into operation by three of the coal mining states of Europe. Austria was, in 1884, the first European

nation to limit by law the number of working hours in coal mines to ten. On January 27, 1901, the law was modified so as to reduce the labor day of all underground workers to nine hours from the time of entry to the completion of the outward journey, including the lunch period. This law went into effect in July, 1902, and reduced the labor day of seventy per cent. of all the coal miners of Austria to an actual working day of about eight hours.

France has also enacted legislation on this subject. To a certain extent this legislation is said to be due to the great strike following the frightful disaster at Courrières. The law, which was passed January 29, 1905, and became effective January 5, 1906, provides for a legal day of nine hours, calculated from the descent of the last miner into the shaft, to the arrival at the bank of the first worker at the end of the shift. This limit is to prevail during the two years, January 1906 to 1908, From 1908 to 1910 the working day may not exceed eight and one-half hours, and after January 5, 1910, the day is limited to eight hours. The law therefore provides for the introduction of an eight-hour day by two half hour stages extending through four years.

The French law, in contrast with the Austrian, does not apply to all underground workers, but only to hewers or pickmen who work in "abbatage", *i. e.* at the coal face. It seems highly probable, however, that it will be extended to all underground workers in the near future.

The only other European country which has at present in operation a legal limitation of the miners' labor day is Holland. Here also the law is of recent origin, and only came into operation on November 1, 1906. Up to January 1, 1908, the labor day in the Dutch coal mines shall not exceed nine hours, and after 1908, no man shall be

allowed to stay underground longer than eight and one-half hours a day, calculated from the beginning of the descent into the shaft to the beginning of the ascent at the end of the shift.

Aside from these cases and the experiments in Australasia, but a very little progress has been made toward the eight hour day by means of legislation. Numerous efforts have been made to secure such laws in England, Germany, and America. In England such men as Chamberlain, Balfour, and Sir Charles Dilke have advocated an eight hour day for coal miners, and no less than fourteen such bills have been introduced in Parliament during the past fifteen years.

Much progress has also been made as a result of the efforts of the laborers themselves. Each of the great miners' strikes in England, Germany, and America have thus far been mile stones in the eight-hour movement.

In the great German coal strike of 1889 the main demand of the miners was for "the eight-hour shift which we inherited from our ancestors". The outcome was an eight-and-one-half-hour day for about four-fifths of the coal miners of Germany. The operators granted a nominal eight-hour day, which was not to include the time taken in going from the bank to the place of work and return. In the strike of 1905, in which about 200,000 coal miners took part, the strikers demanded a system somewhat like the one introduced in France. They demanded a nine-hour day, including the time of entry and exit, for the year 1905, eight and one-half hours for the year 1906, and an eight-hour day after 1906.

The demands of the miners were not granted, and as a result bitter complaints are heard at present in all the mining communities of Germany, because the govern-

ment refuses to legislate on the alleged abuses in the coal mines. In Germany, as in America, legislation of this sort lies within the province of the individual state, and, with the exception of Prussia, they have thus far done nothing. In Prussia the working hours at the collieries are fixed by the labor regulations issued by the mine owners and sanctioned by the superior mining authority (Oberbergamt). This authority is empowered by the Diet to fix the length of the labor day in those cases where the health of the miners is endangered by the long hours. Thus far little has been done, except to provide that where the temperature in mines exceeds 28 degrees C. (=82.4 degrees F.), that the labor day shall not exceed six hours.

Even Belgium, where women and children are still found working long hours in the coal mines, has by royal decree appointed a commission to inquire into the effect of the limitation of hours in the mining industry. Much progress has therefore been made along the line of restricting the hours in the collieries, both by means of voluntary agreements between operators and miners and by legislation, and it seems highly probable that other states will soon adopt similar measures. Thus far such laws have been adopted only in the smaller coal-producing states of Europe and America. France produced about thirty-five and a half million tons in 1905, Austria thirty-five million, and Holland less than a million tons, whereas in America the output of all the Rocky Mountain states, that have enacted eight-hour laws, is very small compared with the enormous tonnage of Pennsylvania and West Virginia, which, according to the returns for 1906, are the two largest coal states of America.

America's real industrial rivals, Germany and England, whose output in 1905 was two hundred and thirty-six

and one hundred and seventy-four million tons respectively, have thus far failed to pass such laws. The advisability of such legislation for the largest coal-producing states, has therefore not been conclusively demonstrated. Before such measures can be advocated, it is necessary to determine what their effect upon the laborers will be, and whether the economic effects on the industry and commerce of the country make this kind of legislation desirable.

THE PRESENT LABOR DAY IN COAL MINES.

First, we must ascertain what the present hours of labor are, if we wish to judge of the effect of an eight-hour law upon the output and the conditions of the laborer. In a factory or other industrial plant it is comparatively easy to get at the hours of labor at any given time. But in coal mining we have often a variable work day according to the conditions in each mine. In some localities the mine is normally in operation ten hours each day, but most of the miners rarely work that length of time, because they are paid by the ton and not by the day, and may stop work whenever they please.

In many communities there are certain short days on which the miners stop work at noon. Where the native American predominates, the mines usually close at noon on Saturdays, because the miners wish to attend football, baseball or other games on that day. Then there are days on which no work is done, which, in addition to Sundays, are considered either legal or regular holidays. Where the foreign element is found, there are from twelve to fourteen Church holy days on which the mines have to close down. In England, where the average normal labor day is nine hours and three minutes, the loss of time due to these causes amounts to four hours

and twenty-five minutes per week, leaving an effective average of only forty-nine hours and fifty-three minutes per person for each normal week.

There is also much time lost in all collieries as a result of stoppage of the mines due to lack of orders, shortage of cars, strikes, lockouts, and accidents. The English labor and trade conditions are much more stable than the American, and yet the average loss of time due to these causes for the ten years ending 1906, was three hours and thirty-seven minutes per week, in normal weeks. This reduces the weekly average to forty-six hours and sixteen minutes. All this loss may be said to be due to causes over which the miner has little or no control, and may therefore be considered unavoidable. In addition to all this, there is everywhere a good deal of voluntary absenteeism not due to illness or any of the above causes. The miner simply stays away from work for a day or more at a time, and thus sometimes loses as much as half the available working time of the week. This sort of absenteeism is not confined to any one locality or to any particular season of the year, but occurs everywhere, in periods of abundant demand and full work, as well as in times of depression and short work. In England, again, the average amount of available work voluntarily withheld by the miners themselves for the period of 1899 to 1905 amounted to three hours and three minutes per week, leaving a balance of only forty-three hours and thirteen minutes, which may be considered the actual average number of hours for all classes in normal weeks.

It appears, therefore, that for the entire United Kingdom, out of the total possible fifty-four hours and eighteen minutes which the English coal miner may work in a normal week, that he actually does put in forty-three hours and thirteen minutes, or seven and one-fourth

hours per day. These seven and one-fourth hours not only include the time which he actually works at the coal face, but the time spent in traveling from the mouth of the shaft to the place where he works, and the time taken for lunch. The English committee therefore found that on an average the English miner actually put in not much more than six hours of actual work on a normal workday.

While no accurate data are obtainable on which to base a similar computation for the United States, it seems highly probable that the average number of hours would, for the whole country, be even less than in England.

It is usually assumed that a shorter work day will produce greater regularity of employment and that much of this loss of time due to voluntary absenteeism and preventable causes would disappear. Thus far the results in America do not confirm this belief. In Ohio, where the eight-hour day prevails, the average number of days worked in the year 1905 were 173, whereas in West Virginia, with the ten-hour day, the average number of days were 237, and in Virginia 237, and in other states from 150 to 250. In no case, even where the eight-hour day is in force, do the miners work the entire 300 days in the year.

It is perhaps true that a shorter and more rigid labor day will eliminate some of the absenteeism and induce the operators to have the breaker and other machinery running more regularly. But, considering the character of the labor and the nature of the industry, this would by no means make up for the loss of time due to the reduction. It has been estimated that in the United Kingdom the total labor hours per day, would be reduced from 6,197,359 to 5,474,328.⁵ It is almost inconceivable that the increased regularity and efficiency of the miners

⁵ See Chart II

should counterbalance this enormous loss of time. In some cases the laborers are not working at their maximum efficiency and in others they have already reached their optimum, and but little increase is possible. The increased efficiency due to shortened hours is more manifest where the reduction is from twelve to nine than where the reduction is from nine to eight hours.

EFFECT ON MECHANICAL EQUIPMENT.

The enlargement of the production per man per hour is much more likely to result from the improvement in the mechanical equipment of the mine. Improved and larger breakers, hoists, coal conveyers, an increase in the number of shafts, and better methods for handling the coal after it leaves the mine, promise much larger increase in output of coal in the future. This movement will probably be hastened by an eight-hour day—but it is a movement which is going on about as rapidly in the mines where the ten-hour day prevails as in the eight-hour mines, and it cannot therefore be legitimately called a result of an eight-hour law.

ECONOMIC EFFECTS OF THE EIGHT-HOUR DAY.

The most important economic question involved is whether or not such a law will result in a diminution in the output of coal. This question is answered affirmatively by nearly all mine owners and by those who oppose such legislation. Others, among whom are many leading economists, labor union leaders and investigators, maintain just as vigorously that the reduction of hours to eight, will not in the long run decrease the output per day per man. Large amounts of statistics are cited on both sides, but a careful study reveals the fact that but few accurate data are available on this specific problem.

If a shortening of the labor day causes a great reduction in the output of coal it is a most serious matter, and is of far greater importance to the country than a reduction of output in any other industry, since nearly all industries depend to a greater or less degree upon a cheap and stable supply of this commodity. The industrial prosperity of a country is no longer measured by the per capita consumption of meat and bread. Says Jevons in his treatise on the Coal Question: "Our subsistence no longer depends on our production of corn. The momentous repeal of the corn laws throws us from corn to coal. It marks the epoch when coal is finally recognized as the staple produce of the country." This epoch, foreseen by Jevons for England at the time of the corn laws, has also arrived in America, and if she is to hold her own in the competition for world markets, she must see to it that her factories, smelters, and steamships are supplied with as cheap a fuel as her rivals England and Germany.

The most thorough investigation of this question thus far attempted, has been carried on by the recent *Miners' Eight-Hour Day Committee in England*. In a hearing before that committee, Mr. Radcliffe Ellis, the chief representative of the mine-owners' association, attempted to show that a reduction of the hours of labor in the United Kingdom from the present average of nine hours and three minutes to eight hours would mean a reduction of 31,900,000 tons per annum, or about thirteen and a half per cent. of the total output.⁶ This, he maintained, would quickly produce a crisis and ultimately the downfall of England as the industrial leader of the world.

As far as actual experiments are concerned, Austria probably furnishes the best example. After a trial of

⁶ See Chart II

four years, the statistics compiled by the Austrian Bureau of Agriculture, indicate that one hundred and seventy-five, out of the total of three hundred and two coal mines, maintained their output, seventy-eight produced less than they had before, and forty-nine fluctuated from year to year.

The Royal Mining Office of Breslau, Germany, states that the reduction of the labor day for the miners in Lower Silesia resulted in from six to twenty per cent. decrease in the output, and in only three mines was it increased. On the other hand, the secretary of the Yorkshire Coal Masters' Association states that the eight-hour day had increased the output in the Yorkshire collieries, whereas in Cumberland a three-fourths hour reduction resulted in an eleven per cent. diminution in the coal product.

The evidence therefore shows what we would naturally expect it to show, that the output is increased under certain conditions and decreased under others. It depends on the character of the men, the character of the coal bed, and the character of the management, whether one result or the other follows.

Generalizations are exceedingly dangerous and they often mean nothing, but if the meager data obtainable in the United States may be made the basis of a general conclusion, it may be formulated as follows: A reduction of the labor day in Pennsylvania and West Virginia will not result in an enormous curtailment of production, as is maintained by the operators, nor will it result in increase of output, as contended by some writers; but it will result, for a time at least, in a reduction of the quantity of coal put upon the market, and that in turn, unless a crisis sets in, will mean higher prices both to the manufacturer and the domestic consumer.

In the long run the mining industry will easily make up for the curtailment of production brought about by a short labor day. As an illustration of the possible expansion of coal production under an eight-hour day, it is only necessary to observe the extraordinary increase in the output of the mines of Illinois, just before the two-year agreement between the miners and the operators expired, on April 19, 1906. (See Chart III.) If at that time, in anticipation of a strike, the output could be increased over a million tons above the highest point reached by production during the busiest season of the year, it is reasonable to suppose that in the country as a whole, a small increase in price would in the long run bring about a more than equivalent increase in production.

In attempting to pass upon the question whether a legal, rigid eight-hour day should be introduced in spite of the probable reduction of output, it is necessary to consider both its effects upon the miners, whose motto is, "Whether you work by the piece or the day, reducing the hours increases the pay", and also the effect upon the industries dependent upon the coal supply. So far as the miners are concerned, there seems to be almost unanimity of opinion that a regular eight-hour day would be advantageous. There is nothing, says Charles Booth, that so tends to demoralize the character of a body of workmen as irregularity of employment.

The educational movement, the Americanization of the aliens, the development of thrift and manhood, are all fostered by short regular employment. It will give the miner what Ernest Abbé said every man was entitled to, namely: "Eight hours for work, eight hours for sleep, and eight hours to be a man." But the laborers are not the only ones to be considered. The great outside public has become a third partner in the coal industry. Its in-

terests must also be considered. The public is vitally interested in the elimination of everything that produces disturbances in the regular supply of coal. The Bureau of Labor reports that in the twenty years, 1881-1900, 13,116, or eleven and two tenths per cent, of all the strikes in the United States were for a shorter labor day, and in 37,113, or thirty-one and six-tenths per cent. of all the strikes, a shorter labor day was one of the causes. During the last six years there has been scarcely a single great strike, in which this question has not been important. If by legislation it is possible to eliminate this important cause of labor disputes in the coal industry it might be desirable, even if the output were for a time reduced.

In Illinois and Ohio, two of the greatest coal-producing states, in which the miners themselves have secured an eight-hour day, the average number of days worked by the coal miners in the year 1905 was only one hundred and seventy-three. In Illinois the average for 1906 was only one hundred and seventy-two days, and for the fourteen years ending 1906 the average was one hundred and eighty-four days. In Pennsylvania, West Virginia, and Virginia, states in which the longer days prevail, where the unions have not been strong enough to win by force a shorter day, the average number of days worked each year is very much greater. In West Virginia the average for 1906 was two hundred and thirty-seven days, for 1905 two hundred and thirteen, and for the ten years ending 1906 the average was two hundred and twenty-four days.

The other states show similar returns. These figures help us to appreciate the economic waste involved in letting the contending factions fight it out. If, in the state of Illinois, the coal miners have been forced to be

idle from four to six months each year during the past fourteen years in a period of unprecedented industrial prosperity, it would seem to indicate that the systems of fighting out industrial disputes is disastrous to the worker at least. An average of from four to six months' enforced idleness on the part of every coal miner in the state tells its own story of misery and loss.

THE EIGHT-HOUR DAY IN ITS RELATION TO THE HEALTH
OF THE MINERS.

The ruling of the Supreme Court in the Utah case lays particular stress on the necessity of such legislation in order to protect the health of the miners. The question naturally arises whether a shorter labor day does materially benefit the health of the miners and whether the miner's health is such that he needs protection. Very few reliable data can be found, but if we can accept the results of the English statistics relating to the health of coal miners, we find that mining is there apparently a dangerous but not unhealthy profession.

Taking as a standard the number of males between the ages of twenty-five and sixty-five years, among whom one thousand deaths occurred in 1900-2, the English Superintendent of Statistics found nine hundred and twenty-five deaths among occupied males, and among the same number of coal miners actually following their employments, only eight hundred and forty-six deaths, whereas the number of deaths among an equal number of tin miners is far in excess of the average for the occupied males in the country.

There are said to be no special diseases that particularly effect coal miners. In recent years, however, the coal miners of Belgium, Germany, and Australia have suffered in large numbers from an intestinal disease caused

by a parasite (*Anchylostomiasis*). When once introduced it spread with great rapidity, largely as a result of lack of cleanliness on the part of the miners and lack of sanitary appliances in the mines.

The disease is preventable in its nature, and has not as yet spread to England or America. While the occupation of the coal miner does not appear to be especially unhealthy either in England or America, it does not follow that shorter hours would not be beneficial to the health of the miners. According to the scanty information obtainable from England, those counties in which the mortality was highest were also the counties having the longest hours for coal miners, whereas the lowest mortality rate is found in those mining districts in which the labor day is shorter than the average. There is not enough evidence to warrant any generalization on the subject, since none of the state mining inspectors or bureaus of labor have given the subject much attention.

ACCIDENTS IN COAL MINES AND THE LABOR DAY.

On the other hand, considerable attention has recently been given to the causes and prevention of accidents in coal mines. The terrible catastrophes both in the United States and in foreign countries have aroused public sentiment everywhere, and in response to this demand, several states are now making statistics of accidents, and investigating their causes and methods of prevention. The advocates of the eight-hour day in coal mines maintain that accidents are often due to the exhaustion and carelessness brought about by long hours. Furthermore, it is claimed that a shorter labor day would promote education, which in turn would tend to lessen the possibility of accidents, since many of them are due to ignorance, rather than to carelessness.

The opponents of such a measure claim, on the other hand, that an eight-hour day will cause excessive haste and carelessness, since nearly all miners are paid by the ton instead of by the day, and in order to do the same amount of work in eight hours as they now do in ten, miners will give less attention to the timbering, the roof, etc., thus increasing the probability of accident. If a shorter labor day would really result in greatly increased speed, this conclusion would probably be sound, but in many cases it is asserted that the miner will not work any faster, but will simply utilize the time which is now wasted and thus maintain the output per day. If accidents were particularly numerous during the last hours of the day, as we would expect in case they are due to fatigue and carelessness, a shorter day would tend to diminish their number, but statistics seem to show that the majority of all mine accidents occur in the earlier hours rather than in the latter part of the day. They are more frequent where foreigners are employed than among native-born miners, and, according to the data gathered by the inspectors of West Virginia, vary inversely with the length of time the workmen have been engaged in mining.

The long labor day does not, therefore, appear to be a direct cause of accident. There may be a slight indirect relation, but this also is very uncertain. The long labor day makes it more profitable to employ cheap foreign labor than under an eight hour day. These foreigners, ignorant of the language of the bosses and the managers, can with difficulty be taught the most elemental principles of safe mining. In some of the German mines this danger is deemed so great, that foreigners who do not understand the German language are refused permission to work underground. A compulsory eight hour day

would make it unprofitable to employ the cheapest grade of labor now utilized, and native-born miners would, it is believed, take the place of the immigrants.

THE MEANING OF AN EIGHT HOUR DAY.

An eight hour day in coal mining has no definitely established meaning such as it has in the factory. The men must descend the shaft a few at a time and, where the number of workmen is large, this operation takes from fifteen minutes to an hour. In England the average is half an hour, whereas in America the average is perhaps lower because many of the mines are very near the surface. The eight-hour day as interpreted by the English Committee means a 'bank to bank' day, which means a period of eight hours' duration under ground for each individual miner. It may be calculated from the time the first cage in the morning leaves the mouth of the mine to the time when the first cage in the evening carrying miners reaches the surface, or it may be calculated from the time the last cage leaves the mouth of the shaft to the last cage in the evening. Another way to measure the eight hour day is to calculate it from the descent of the first man to the ascent of the last man, thus confining all the operations of the colliery to certain specified hours. This method would make the average time of all miners underground, from eight and a quarter to eight and a half hours.

Another method of interpreting the term "eight hour day" is, that it means eight hours for raising coal and that the men shall be raised or lowered before and after this period of time. This is the method used in many of the mines in Germany. According to the regulations of the Royal Coal Mines, it is counted "from the termination of the lowering of the men in the cages to the beginning

of the raising of the men". In the Central States where the so-called eight hour day now exists it is in reality an eight and one-half hour labor day. The miner, in most of the bituminous mines, has to be in his working place and not, as in Germany, at the shaft of the mine at both the beginning and the end of the eight hours, which means that he has to be hoisted and lowered on his own time and furthermore has to travel to and from the place of work from the base of the shaft, which in some mines is a distance of nearly four miles. As the shaft is deepened and as the workings progress, the miners' labor day will thus gradually become longer, until another limit is established, usually as a result of a strike or a labor struggle. This condition prevails more or less generally in all the coal mining states east of the Mississippi, and that means that the labor day agreed upon in 1897 will in time grow longer and longer, and thus become a cause of future labor disputes.

Legislation is therefore not only needed in Pennsylvania, West Virginia, and the South, where the long day prevails, but in the very states in which the eight hour day is said to prevail, in order to establish a uniform and unchangeable normal bank to bank day, so as to fix by law the unit of measurement of labor just as at present weights and measures are established. This being fixed there would still be ample scope for collective bargaining between the miners and the operators concerning the wages or rate per ton. Such labor legislation could be introduced most advantageously in a time of industrial depression when the demand for coal is declining. At such times there will not be so much opposition to it on the part of the operators, nor will it result in a great increase in the price of coal. In many states the machinery for carrying out such a law is already in existence, for

the duties of the present mining inspectors could easily be enlarged.

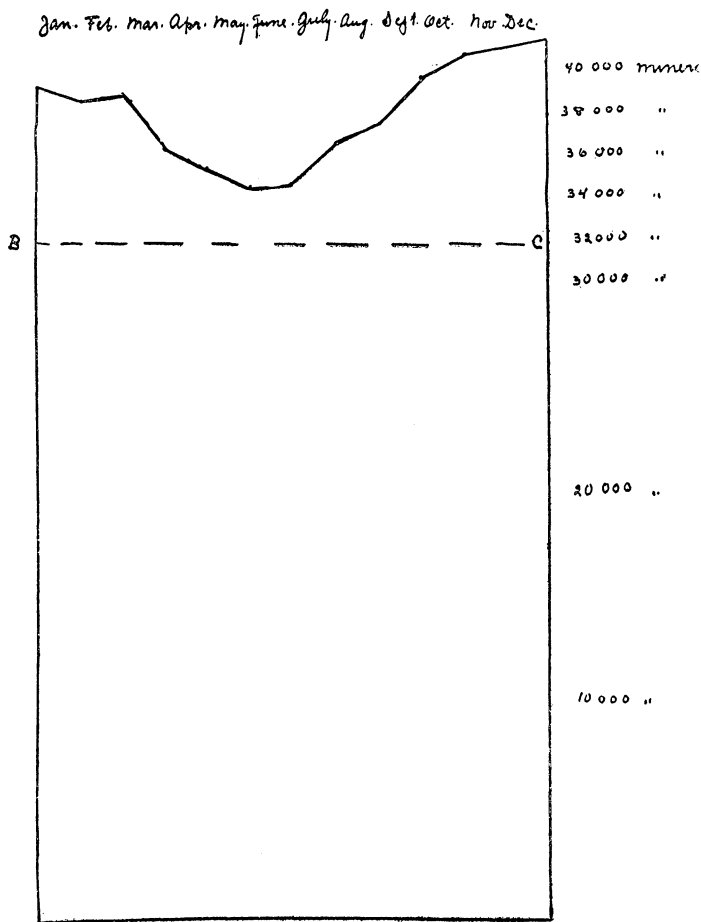
A RIGID OR ELASTIC EIGHT HOUR DAY.

It is important to consider whether such a law should be absolutely rigid and uniform or whether temporary or permanent exceptions should be allowed, by giving some official in authority, power to issue permits to operate longer than eight hours per day. Permanent exemptions might be granted in those cases where mines would have to be shut down, were the law rigidly enforced. Temporary exemptions might be granted for a month or two in times of emergency when the demand for coal is excessively great and the supply inadequate. In France where this system has been tried the temporary exemptions have aroused bitter criticisms, whereas no complaints have been heard with regard to the permits for the poorer mines. It is a question whether such an elastic system could be carried out in the United States. Where a suitable scheme of enforcement could be devised, it would seem exceedingly desirable, if exemptions could be granted to those mines whose profits are so small, that they could not continue in operation under an eight hour system. This, however, is a question of administration and expediency rather than one of policy. In any case, what is needed first of all, is investigation. To this end there should be more coöperation between the state and national investigating agencies. To obtain valuable results some uniformity of terms and their meanings should be agreed upon, and special attention given to the actual conditions in the coal mines of each state. Such investigation should precede legislation so that the law-makers may know exactly what changes such a law will bring about, how many laborers and how many mines will be

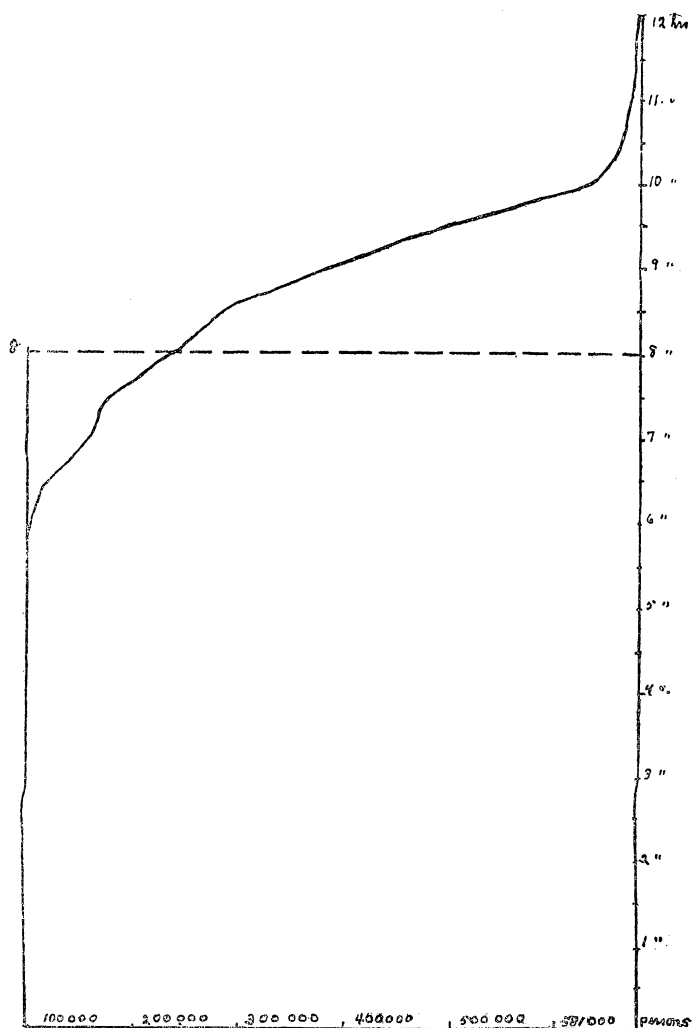
affected, and what the probable diminution of output will be.

The shorter labor day is bound to come. If it is not introduced by legislation, it will come as a result of industrial war and at an enormous cost to the country at large. The economists and writers on this subject seem to be divided into two great camps. One group, like Professor Ashley, the representative of industrial imperialism, believes that brute force will in the end have to settle all these questions, that it is best to let the laborers and the employers fight it out if such disputes are to be permanently settled. They believe that legislation usually interferes with the natural trend of events without really accomplishing anything. Says Professor Ashley in his book on the Adjustment of Wages, "For it has to be clearly understood that the ultimate arbiter in the industrial world as in the world of international politics is *force*. The determining decisions can commonly only be arrived at by a trial of strength."

The other group seems to believe that we have reached a stage, where the state can put an end to some of these industrial combats, by making laws which will diminish the uncertainty concerning mutual rights. Legislation cannot of course do everything. Legislation can only be successful where it is backed by a party or public sentiment strong enough to enforce the law. Where there are no miners' unions, and where the foreign elements predominate in the coal mines, it is doubtful whether an eight hour law would be effective. But wherever the miners have aggressive organizations, they could secure the enforcement of an eight-hour law, even though they are not able to win an eight-hour day by force.

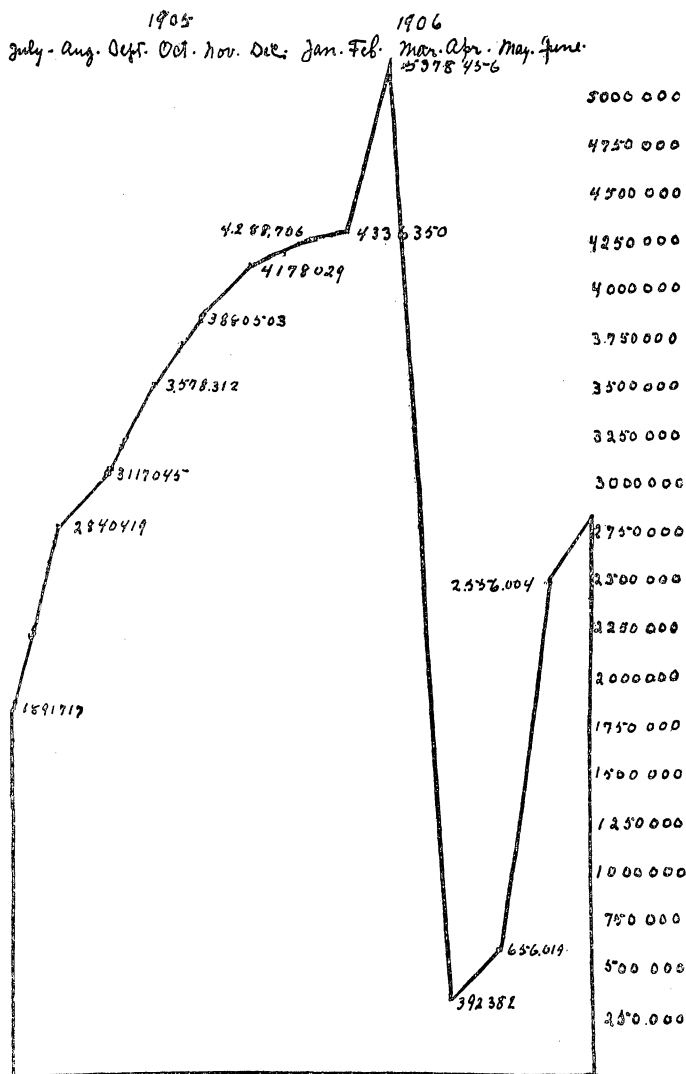


I. Number of miners employed each month in Ohio in 1905.
 Reproduced from the Appendix of the Report of the Miners' Eight Hour
 Day Commission of England.

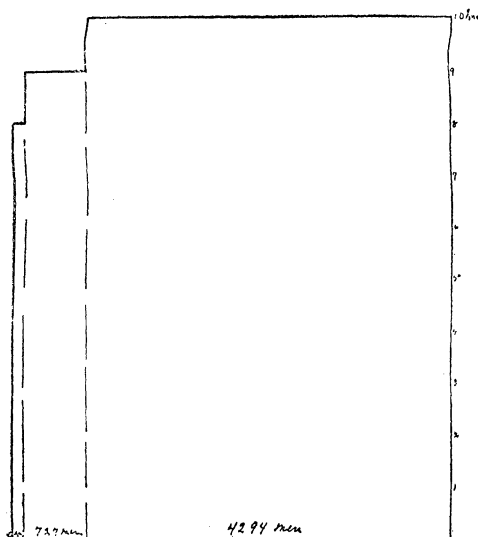


II. The labor day in the coal mines of England.

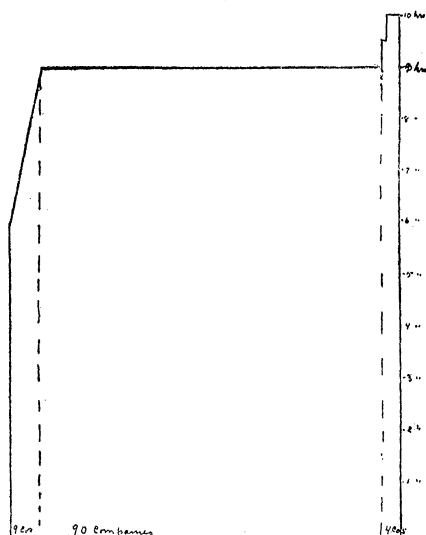
The part above the broken line shows the time which would be lost by the introduction of an eight hour day. From Report of Miners' Eight Hour Day Commission.



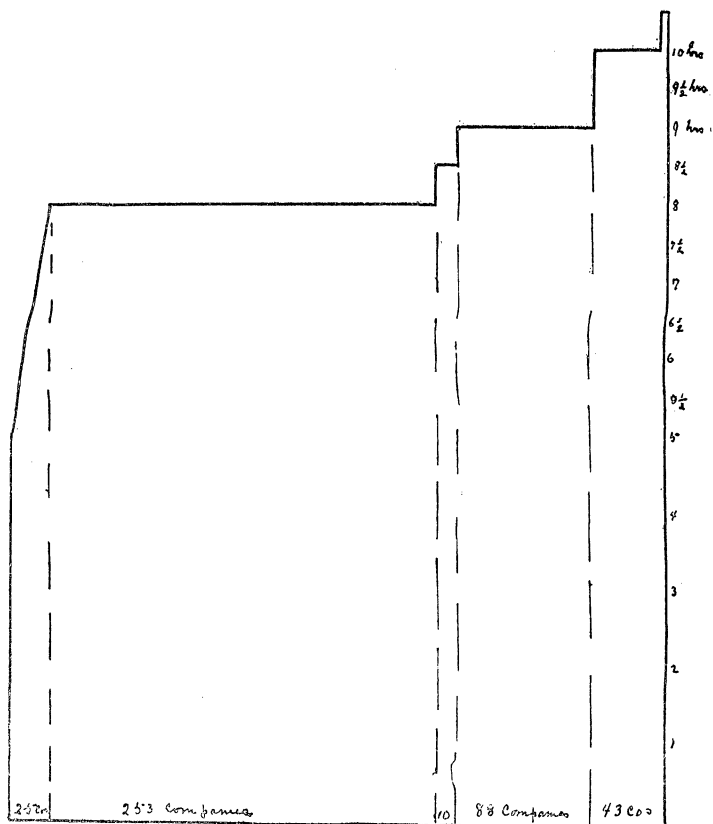
Output of coal in Illinois for each month July 1905 to July 1906



IV. Labor day in the coal mines of Virginia, 1906



V. Anthracite coal companies in Pennsylvania in 1905 with labor day.



Labor day by companies in bituminous mines of Pennsylvania 1904